

REMARKS

Applicants and the undersigned are most grateful for the time and effort accorded the instant application by the Examiner. Claims 1-43 were pending in the instant application at the time of the outstanding Office Action. Of these claims, Claims 1, 23, and 43 are independent claims; the remaining claims are dependent claims. Claims 1-43 stand finally rejected. The Office is respectfully requested to reconsider the rejections presented in the outstanding Office Action in light of the foregoing amendments and the following remarks.

Applicants representatives conducted a telephone interview with the Examiner on Tuesday, November 4, 2008. The pending claims and the cited art were discussed. No agreement was reached.

It should be noted that Applicants are not conceding in this application that the claims amended or cancelled herein are not patentable over the art cited by the Examiner, as the present claim amendments and cancellations are only for facilitating expeditious prosecution. Applicants respectfully reserve the right to pursue these and other claims in one or more continuations and/or divisional patent applications. Applicants specifically state no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Rejections under 35 U.S.C. § 102

Claims 1-10, 13-16, 18-30, 33-36 and 38-43 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Chaiken et al. (U.S. Patent no. 6,587,966, hereinafter “Chaiken”). Applicants respectfully request reconsideration and withdrawal of these rejections in light of the foregoing amendments and the following remarks.

The instant invention is broadly directed to:

automatic crash recovery for operating systems. When an operating system crash is detected, the faulty device drivers are identified, unloaded, repaired, and then restarted. For repairs to take place, a mapping of symptoms to fixes must be maintained either on the local machine or one or more remote servers. After a potential fix for crash is identified, it is downloaded and installed. After the installation of the repaired or replaced driver, the driver is restarted. Other steps, such as determining the possibility of corruption, are also contemplated.

Specification, pp. 3, lines 6-12. Moreover, the instant invention also broadly contemplates:

[t]he newly applied solutions are then tested **360**. In an exemplary embodiment of this method, the testing step **360** entails removing the Crashed Computer **410** from the suspended state that the kernel entered during the crash event **280**. The computer is allowed to continue to run; however, the new device driver may be monitored for a short period of time to ensure proper operation. Additionally, during the solution stage **340** one or more test programs may be acquired. If this is the case, the test programs are executed before returning the machine back over to the user and/or user programs. If a test program reports a negative result, then the fault resolution method returns to the analysis state **320**. If a test program reports a positive result, then the machine is returned to production **370**. The Crashed Computer **410** may contact the service server **430** to report the successful resolution of the crash or other information pertaining to the solution.

Specification, pp. 11, line 15-pp. 12, line 8.

As best understood, Chaiken teaches a method for restarting from a system hang.

Chaiken, Abstract. Chaiken teaches that a hang may be presumed if the operating system kernel fails to respond to operating system interrupts. *Id.* More specifically, Chaiken teaches that “[i]f an operating system hang condition has occurred...the operating system kernel **140** will not respond to operating system interrupts and therefore, will not reset the status flag in response to the operating system interrupt generated by the timer **180**.” *Id.* at Col. 5, lines 17-22. “Therefore, if the status flag remains in a set state for a predetermined amount of time...an operating system hang condition may be presumed to have occurred.” *Id.* at lines 22-25.

Thus, Chaiken is narrowly scoped to look only at operating system hangs.

Chaiken makes no attempt at determining the underlying cause of the hang or providing any solution other than “the system BIOS **150** may power down or otherwise disable these devices in order to clear the operating system interrupt and thereby enable the operating system kernel **140** to process operating system interrupts from other devices or processes.” *Id.* at Col. 6, lines 53-57.

Thus, the instantly claimed invention stands in stark contrast to the teachings of Chaiken. Whereas Chaiken is narrowly directed to detecting operating system hangs and disabling the device responsible for the hang, the instantly claimed invention provides automatic crash recovery, including applying a solution, testing the solution, etc., to return the machine to production.

Solely in an effort to facilitate expeditious prosecution of this application,
Applicants have amended the independent claims. Claim 1 now recites, *inter alia*,

providing automatic recovery from operating system faults, said providing automatic recovery further comprising: detecting an operating system fault; analyzing the operating system fault; determining a cause of the operating system fault; determining a solution; applying a solution; *providing a resolution test; and returning to production.*

Claim 1 (emphasis added). The remaining independent claims contain similar limitations. Nowhere does Chaiken teach or suggest that a solution should be determined and applied for crash recovery. Moreover, Chaiken merely indicates that a device causing an operating system hang may be powered down, not that a solution may be applied, a resolution test provided, and the machine returned to production.

Applicants briefly note that the amendments presented herein incorporate a dependent claim into an independent claim (e.g. claim 2 is incorporated into claim 1). Applicants respectfully submit that the amendments presented herein require no further search for entry. Therefore, Applicants respectfully request reconsideration and withdrawal of these rejections.

Applicants also wish to point out that Chaiken clearly does not teach the limitations of the remaining dependent claims, even prior to the above noted amendment to the independent claims. For example, Claim 7 recites, *inter alia*, “wherein said detecting step comprises *a hypervisor observation of unusual behavior from a guest operating system*”. Claim 7 (emphasis added). Applicants respectfully submit that

nowhere does Chaiken teach or suggest the detecting step includes an observation of unusual behavior of a guest operating system by a hypervisor.

As another example, claim 8 recites, *inter alia*, “wherein said detecting step comprises an interception of a call to an operating system halting routine or exception handler.” Applicants respectfully submit that nowhere does Chaiken teach or suggest the detecting step includes interception of a call to an operating system halting routine or exception handler. Other similar shortcomings of Chaiken are apparent throughout.

Therefore, Applicants respectfully submit that the remaining dependent claims are in condition for allowance not only because they depend from what are believed to be allowable independent claims but because they contain additional novel features not taught by the cited references or in the state of the art, as briefly highlighted above.

Rejections under 35 U.S.C. § 103(a)

Claims 11, 12, 17, 31, 32 and 37 stand rejected under 35 USC § 103(a) as being unpatentable over Chaiken in view of Cantrill (U.S. Patent No. 6,523,141, hereinafter “Cantrill”). Applicants respectfully request reconsideration and withdrawal of these rejections.

Applicants previously submitted remarks of June 17, 2008, remain applicable and are therefore incorporated by reference as if fully set forth herein.

Briefly, Cantrill does not teach automatic crash recovery at all. Cantrill uses post-crash analysis to locate the cause of a memory leak and report on it. *Cantrill*, Col. 2,

lines 51-65. Cantrill does not teach returning the crashed machine to production by automatically applying solutions, providing resolution tests, etc.

Moreover, Cantrill in combination with Chaiken does not render the above noted claims obvious under 35 U.S.C. § 103(a). For example, claim 17 (and corresponding claim 37) recites, *inter alia*, “wherein said solution is automatically downloaded and installed.” Nowhere does Cantrill, even in combination with Chaiken, teach or suggest that the solution for crash recovery be automatically downloaded and installed.

In short, nothing in Cantrill accounts for the deficiencies of Chaiken as discussed briefly above. Chaiken does not teach or suggest the limitations of the independent or dependent claims, taken alone or in any combination with Cantrill. Therefore, the combination of Chaiken and Cantrill cannot render the claims obvious under 35 U.S.C. § 103(a) and Applicants respectfully request reconsideration and withdrawal of these rejections.

Applicants briefly note that certain dependent claims have necessarily been amended to change their dependency in light of the amendments discussed above.

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Conclusion

In view of the foregoing, it is respectfully submitted that the independent claims fully distinguish over the applied art and are thus allowable. By virtue of their dependence from the independent claims, it is respectfully submitted that the independent claims are also in condition for allowance.

In summary, it is respectfully submitted that the instant application, including Claims 1, 3, 5-23 and 25-43, is presently in condition for allowance. Notice to the effect is hereby earnestly solicited. **If there are any further issues in this application, the Examiner is invited to contact the undersigned at the telephone number listed below.**

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Stanley D. Ference III", written over a horizontal line.

Stanley D. Ference III
Registration No. 33,879

Customer No. 58127
FERENCE & ASSOCIATES LLC
409 Broad Street
Pittsburgh, Pennsylvania 15143
(412) 741-8400
(412) 741-9292 - Facsimile

Attorneys for Applicants